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Home on the Range

Teacher's Guide

Frank C. Hardwick

A GAGE WORLD COMMUNITY STUDY: *Neil Sutherland, General Editor*

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Home on the Range has been designed to reinforce the main ideas and skills of the studies undertaken during the year. It gives the teacher an opportunity to assess the learning that has taken place and do something about the inadequacies that become evident before the year ends. It does this in an interesting new situation, different enough to afford an application of what has been learned. The following are some of the features of this study.

- Conservation of the environment, especially of the available supplies of moisture and marginal lands.
- Adapting the use of the environment to its nature and to the needs of the people.
- Adapting to the climatic and physical features of the environment.
- Appreciation of the history pertinent and relevant to the life of people today.
- Effective use of modern technology and "know-how".
- The economy of large-scale operations.
- The role individuals, families, communities, and governments play in improving the economic well-being and the quality of life.
- The inevitability of change, and how it affects people.
- The influence of personal and community values.
- The role of the school, the home, the community, and the occupation in education.
- The involvement of real people, with different values, in a way of life which shows that basically all people are much more alike than different.
- Practise of social-studies skills at a slightly higher achievement level, such as:
  - (a) maps more like those pupils will find in atlases than the pictorial type, with grid location letters and numbers.
  - (b) longer quotations from which pupils select the relevant information, rather than quotations that supply the relevant information only.
  - (c) use of practical mathematics, ranging from quite simple to rather complex concepts.
  - (d) sophisticated presentation of information in tables and diagrams, etc.
  - (e) opportunities for independent research at varying levels of abilit, interest, and need.

WHEN GRANDMA AND GRANDPA WERE KIDS
BERN: CITY IN THE MOUNTAINS
LIVING IN A NORWEGIAN VILLAGE
DOWN UNDER AT BARWIDGEE
SAFARI TO SEROWE
THEN AND NOW IN FROBISHER BAY

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COMMUNITY STUDIES

These are studies of the ways of living of varied groups or communities of people. Within the general experience and understanding of the children who will be using these World Community Studies, these groups range from the small and intimate, such as the family, to the larger and less personal, such as their own neighborhood and community.

At one end of the spectrum, these World Community Studies deal with people as individuals, and at the other, touch on national communities and even the world community. They are, however, *primarily* designed to move the children's understanding naturally outward from the family-focussed studies which they met in their earlier years in school to the wider communities in which families live.

In each study the children not only become aware of the nature of the larger groupings within which people live, but also are asked to analyse some of the dimensions and dynamics of human life as it is lived in groups. From this analysis the children will come to understand many of the ideas and practices — such as, to give but one example, the division of labor and individual specialization — which are at the root of group living.

In addition to this common focus on group living, each study contains a broad range of concepts drawn from the social sciences. The particular concepts underlying each study are outlined in the guide to the individual study.

Values are an integral part of this series. In a low-keyed and natural way, each study provides opportunities, situations, and questions which enable the teacher and children to work together in developing, practising, and discussing values.

Presentation

These are studies, not textbooks. Collectively they offer a rich variety of evidence to be examined, discussed, considered, and reconsidered. By using them, sometimes working alone and sometimes with his friends and his teacher, each child can form his own impressions, his own opinions, and his own tentative answers. The writers are more interested in providing both a broad range of viewpoints and ample practice across a wide range of skills than they are in presenting their own opinions and conclusions.

While each child can reasonably be expected to pursue the exploration of the main idea, it is unnecessary for each to investigate every facet of every study. Each section of the study brings to view several different avenues for exploration and many intriguing little alleys. The avenues are ideal for group exploration; the alleys are for individuals or twosomes, according to interests and abilities.

It is possible for a class to get so carried away by a study that, except for a few enthusiasts (which may include the teacher!), the children become bogged down before they reach a satisfying and successful culmination. This problem can probably be avoided if the teacher and the class select the studies for the year, decide on a sequence, and set dates for the introduction and culmination of each. When a study is finished and the class has moved on to another one, interested individuals and groups of children can, of course, continue to follow up their enthusiasms.

These studies are designed to arouse interest and provoke inquiry. The writers have provided opportunities for the children to establish what they think they already know, what opinions they hold, what evidence they have to support what they say, and what questions help them define what they do not know. The major concepts in each study are developed in a cumulative fashion. Many pairs of facing pages present materials from which the children can glean evidence related to one facet of the main idea. The use of the evidence on succeeding pages enables the children to enlarge, refine, or modify their concepts and ideas, and consider evidence found elsewhere. To interpret the evidence, the children use first of all their own experience, and then they apply to the many materials the range of skills which are building up as they work through the studies. It is thus important for them to relate each study to their own community, and to practise most skills in that context. They must also ask themselves how and why the ways of living are the same or different in this other community.

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Two general kinds of skills are taught and practised in these studies, skills of working together and skills of inquiry and critical thinking. The following suggestions may be useful to teachers in organizing their teaching strategies for the studies.

SKILLS AND ABILITIES

Skills of Working Together

Group work

Each study offers many opportunities for the children to work together in small groups. It is in these situations that they learn to share, to work as a team, to practise give and take, and other skills of co-operative living. They also learn to communicate their findings to others, point to the evidence they have used, and invite comment and constructive criticism. Many teachers who use small group techniques follow these steps.

1. Teacher and/or class decide on something which a small group or committee could investigate. For example: "What books does our school library have which might help us in our study of our community?" "What does this picture tell us about the lives of Eskimos?" "What would we like Johnny's grandpa to tell us about when he visits the class?"
2. Teacher and/or pupils select a small group to carry out the job. At this age, small committees of from three to five pupils seem to work better than large groups.

Sometimes pupils should choose which jobs to do and which group to join. They will likely choose the job they think they are good at and the group they think congenial. Sometimes they should be assigned a task because they need to learn how to do it, and perhaps be directed to a particular group because they need to learn how to get along with all kinds of people.

3. The groups work (generally over a short time) on their project. In the early stages of this work, the teacher will probably find that groups will need considerable help in organizing themselves and actually getting down to the job. For example, "What is it that your group is to do?" "Where will you work?" "What books will you use?" "What exactly have you found out?" "Can we make a list on the board of the things you have discovered?" After a class has worked a number of times in informal, small-group sessions, the teacher may find it useful to take a little time to discuss with the class as a whole the ways in which groups can work together effectively.

Young children have no difficulty talking and arguing. They do have a hard time holding back; they tend to blurt out their ideas as they arise, with commendable candor, but with little regard for the social amenities. When "discussion" breaks down for this reason, talk with them: "Why did you have a bad time? Why didn't you take turns the way you do when I'm running a discussion? Do you need someone to see that everyone gets a chance?" Then let them make their own "rules" and try them out.

4. A spokesman selected by the group reports briefly and informally to the class. In the first stages of group work with a class, the teacher may find that the children respond better to questions posed by their teacher on their findings. Gradually, however, the children should be encouraged to prepare their reports as a group and to select one of their members to present it to the class.

Role playing

Briefly, role playing is simply the impromptu dramatization of a problem or idea for class discussion. That children use this technique often and naturally can be seen in their many games involving school, house, etc. That is why the studies have so many unposed pictures of people, and particularly children, doing something significant. Many of these pictures are so appealing to children that their first reaction may be "Let's play that!" The principal advantage of the technique in school is that it enables children to get right "inside" a point of view, rather than just passively observing and discussing as spectators. Role playing is also probably the most effective way for children to explore and even occasionally confront their own values. The first few times the children may be a little awkward and self-conscious, but after a very little while most classes enthusiastically respond to the chance to do some role playing.

Most teachers who use this technique in their classes follow these steps.

1. Teacher and/or class decide on the situation to be faced. This may be selected from or suggested by the study, or may come from some immediate or familiar problems of school or family life, such as disobeying school rules, or discussions between parent and child over the doing of chores. (For example, Arlene and Ricky are always arguing with themselves and their mother over what programs they will watch on television.)
2. Think up a scene that illustrates the subject. Decide on a few characters, name them, and plan how they are to relate to one another. (For example, Arlene and Ricky are having their nightly argument about television. Ricky wants to watch cartoons while Arlene wants to watch "Lucy." When the arguing gets very loud, their mother comes in and, after listening for a moment or two, says . . . (It is here the pupils take over. Don't supply the answer to the problem.)
3. Select the players — at this age not more than two or three. Give them a few moments to think over the situation which you have decided on and explained to them.
4. Have the characters take their places and begin.
5. The teacher should cut off the role playing before it begins to drag (about 2 or 3 minutes is considered a maximum).
6. Characters are asked to describe how they felt in their part. This is a *most* important part of the proceedings.
7. Sometimes it helps to repeat the scene two or three times with different actors to illustrate different kinds of response to the same situations. (For example, in other versions of the television debate, Ricky gets his own way by having a tantrum; Arlene wins because she is bigger and stronger, and so on.) The children will usually be able to suggest a list of very realistic possibilities.
8. General class discussion. Start with the particular scenes enacted. First of all, ask the children what they saw. After ample time has been given to this, move on to the larger issues involved. If the scene is repeated by several different groups, wait until all have performed before beginning discussion.

Many teachers find that, during discussion, children tend to defend the type of reaction they illustrated. Teachers can avoid this type of exchange by taking a minute or two ahead of the discussion to "de-role" the players — reminding them that they were just actors showing one way of handling a problem and now, again, are part of the discussion group. The process of de-roling generally makes it much easier for a student to give an objective answer to such a question as "How did it feel to be the bully?" and helps all students to feel free to comment pro or con. De-roling helps the class realize that they are talking about an idea or a way of behaving and not about the person who illustrated the idea or the way of behaving.

The quality of discussion can be expected to improve over a period of time. Effective discussion develops more quickly if teachers refrain from endorsing any one idea or way of reacting, for once this is done, it is amazing how quickly students of these ages line up behind the "teacher approved" point of view, thus limiting discussion. Even such a natural response as "That's a good idea, Joe" can stifle the development of good discussion.

Several excellent references offering guidelines for role playing are listed with the references at the end of this section of the guide.

Skills of Inquiry and Critical Thinking

Often a great deal of unnecessary mystery is made of "skills" in the Social Studies. Despite the present "communications" and "media" revolutions, *reading* is still the basic skill which the school teaches. Undoubtedly reading is also the most important skill of the Social Studies. In addition to reading written passages to find out what they are saying to them, however, pupils studying topics in the Social Studies must also be able to "read" many other kinds of materials to see what is the particular message of each. Learning the skills of "reading" an aerial photograph, a television program, a large-scale map, or the globe is learning how to understand what the photograph, or television program, or map, or globe is trying to say. While this idea of what materials *do* is simple enough, learning the actual skills of picture reading, map reading, time line reading, etc., is sometimes almost as complex as is learning to read itself. The skills of these various kinds of reading need to be learned sequentially and systematically.

While there is no inviolable list of general "rules" for studying materials with children, the writers and the teachers who helped them prepare these studies had two general principles which they kept in mind.

First, with each example of each material, they tried to structure their planning and teaching around the following framework.

1. What do we want to know? What is the general question or questions before the class at the moment which we want this particular material to help us to answer? For example: "What is the winter climate like in Frobisher Bay? How does it affect the lives of the people who live there?" *or* "How does Australia compare in size to Canada?" *or* "What was school like for our grandparents?"
2. What does this particular item tell us in answer to our question? For example: "What does this film tell us about winter weather in Frobisher Bay? What do the people do to prepare for winter? How do they react to winter?" *or* "When we look at the globe, which is larger, Canada or Australia?" *or* "What does this photograph of a classroom 50 years ago tell us about going to school then? What were the desks like? How were the children dressed?
3. Before we can actually answer question 2, do we need help with the detail, do we have to learn what particular things signify? This step is very analogous to vocabulary drill in reading. For example: "What are those animals in the background of the photograph? How large are they?" *or* "What do dotted lines mean on this map? How do we measure distances on this map?" *or* "What are the little 'boxes' in this aerial photograph? Which are the streets?"
4. What are the advantages and limitations of this particular example? What are the advantages and limitations of this kind of material? Just as important as learning not to believe all one reads is learning not to put implicit trust in all one is shown. The material may be out-of-date, may be unique instead of normal, may have been prepared "through rosy spectacles," without any indication of normal hazards, discomforts, or disconcerting realities. It is important that children ask themselves what the material *doesn't show or doesn't tell.* For example: "How do the cars shown tell us that this photograph was taken quite a few years ago? What other clues can we look for in photographs which will help us tell when they were taken?" *or* "What senses did we use in watching this movie? Which senses didn't we use? If we had been able to touch things in the movie, what would you like to touch? What would it feel like? What *wouldn't* you like to touch? Why? How can we find out what X feels like?" *or* "What kinds of things does this (very large-scale) map tell us that this (smaller scale) map does not? Why do most maps have north at the top?" *or* "Is it *usual* for us to see Mounties in red uniforms and on horseback? Is it *usual* for Dutch children to wear the 'national costume' and stand in front of a windmill?"

Each study has many particular examples of this teaching model in action.

The second general principle is to take materials in their order of abstraction. If, for example, one has an Eskimo's carving of a walrus, a photograph of an Eskimo carver at work, and a newspaper article about the Eskimo carvers' co-operative selling organization, then one would usually present them to the children in that order.

Since it can bring to bear the widest range of involvement, of "thereness," and of sensual experience (seeing, touching, hearing, smelling, and even tasting) the field trip is the most concrete of teaching "materials." A textbook or an encyclopedia description is probably the most abstract. Between these two extremes fall most of our other teaching materials. Pictures are more concrete than maps, with close-up pictures being more concrete than oblique aerial photographs. The larger the scale of the map, the easier it is for the children to grasp at once what it is saying; hence large-scale maps should be used before small-scale ones. Written material ranges from the "I am there" quality of the first hand account, to the analysis and generalization of the encyclopedia article.

All of this is not to say, of course, that we should confine our teaching only to the most concrete of materials; only that by beginning with the most concrete we can help the child project himself more fully into an understanding of the more abstract.

Towards a Sense of Time and Chronology

For young children, time is undoubtedly the most difficult dimension to grasp and with children of this age we will only go a very short way towards developing a mature understanding of it.

Young children's sense of time depends upon their own direct experiences. Their ability to recognize a sequence of events outside their direct experience is very limited. Time, for them, does not fly; it creeps from Christmas to Christmas and from birthday to birthday so slowly that a year, a decade, and a century — are all the "long ago" and the "once upon a time."

However, some time lines make sense to them. The chronology of their brothers and sisters and their own place in that sequence is well known to them as an alternating source of satisfaction and annoyance. And the time line of their possessions — scooter, tricycle, and "real bike, a two-wheeler" — is an essential stage in the development of a sense of chronology. In these World Community Studies most children will be able to apply this personal sense of past, present, and sequence to the people and things they encounter in each study. For some it will be merely a classification of "then" things and "now" things, like clothes, vehicles, tools, etc. Others can arrange things like ships into a time line. Each time a "when" question is put, it can probably be related in some way to something known and significant (when grandma was a little girl, before there were airplanes, etc.). Each such relation will help children to develop a sense of chronology.

Many personal and family time lines are possible. It is best to start with short ones and build up gradually to longer time periods. Time lines showing a particular day, a particular week, a month, a year, and eventually the children's whole lives are good possibilities. Parallel time lines are also very useful teaching devices; after making a time line of their class activities for a month, for example, the children can make a parallel line for events in their own family over that same time period.

Time sense is also developed in the planning of how they are going to conduct a facet of each study: "*First* we need to divide up the jobs. *Next* we need to choose our groups. *After that* we should hunt for things that tell about our part. *Then* we decide what to tell and show the others. We should be ready to do this *next Monday*."

Some dates can be made significant. For example: when the question arises "What houses in our town were built when grandma and grandpa were kids?"; the children need to ask, "When was this house built?", get a numerical-year answer, and do some arithmetic to come up with "This house was built when grandma was three," *or* "before grandma was born."

Towards a Sense of Place and Space

Some children using these studies will be better prepared than others to read and interpret the picture and map materials. One interesting challenge presented is the understanding of aerial photographs taken from a low oblique angle and from directly overhead. Many children experience little difficulty with this particular skill, having been "tuned in" through frequent exposure to such viewing angles as are used by the various news media. For youngsters less familiar with these viewing angles, several teachers used a simple camera and worked with the pupils to set up and take pictures from each of the different angles. One class moved a desk and chair outside by some small shrubs close to the school. One or two children stood by the desk while the teacher first took a normal picture, then took a shot at an angle from a first floor window and finally several shots looking straight down from an upper floor window and the roof. When the pictures were developed they were posted and discussed. Whenever a low oblique or overhead picture appeared in the study, the position of the photographer was discussed with reference to their own set of pictures, and fewer problems arose.

Another class set up a model village with shoebox houses, trees, and roads and took pictures from the side, from a 45° angle, and from directly overhead. Again, understanding appeared firm, and in both instances the children involved in these sequences seemed altogether more interested in discussing the work of the "other" photographers which appeared in the studies.

Similarly, some children using these studies will be well prepared by experience, in school and out, to:

- relate oblique and vertical aerials and other photographs to the maps;
- orient themselves to each map, globe, or picture;
- use "up" and "down" with discrimination according to the context in which they are encountered (up the river, up north, uptown, up into orbit, look up to; and down south, downtown, down the mine shaft, look down on);
- understand, appreciate, and use the scale (How long would it take to walk from that airport to that schoolhouse?);
- use a letter-numeral grid;
- have an accurate visual concept of what each symbol represents.

Other children will have such limited experience that they will need to be led patiently to competent use of the terms north, south, east, and west. Since many levels of accomplishment may be evident in any class, most teachers find small short-term groups best for map study.

Using Local Resources

The discovery and use of local resources in each study serves several purposes. It helps children relate the new to the known and achieves a relevance otherwise difficult to accomplish. Further it leads them towards independence in finding evidence and lessens their dependence upon the teacher and the school books. It will almost always uncover *real* things, artifacts to be seen, handled with care, and appreciated. Most museums now supply kits of artifacts to those too far away to make a visit practical.

But the most effective local resource is people, — people who have been to the places being studied, importers who deal in its products, citizens whose ancestors came from that land, the school and public librarians, the curators of galleries and museums, etc. A portable tape recorder is of value here not only for personal interviews but for recording the sounds of the train terminal, the sounds of the farm, the seashore or whatever location may be visited. Several classes have collected good sound tape libraries which serve them well as sound effects for plays or puppet shows.

References

Since most books which deal with the teaching of the Social Studies consider the matters raised in this introduction in much greater detail than is possible in this brief space, no long bibliography seems necessary. The writers will mention only seven books which they have found to be particularly useful and helpful.

A useful book for development of good questioning is Norris M. Sanders, *Classroom Questions — What Kind?* (New York: Harper and Row, 1966).

For a wealth of specific and practical examples of how to use the many teaching materials in the Social Studies, see F. C. Hardwick, *Teaching History and Geography,* a source book of suggestions, 2nd edition (Toronto: W. J. Gage Limited, 1967).

The best book on the use of role playing in the elementary classroom is Fannie R. Shaftel and George Shaftel, *Role-Playing for Social Values* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967). For a detailed presentation of the many possibilities of small group work in elementary classrooms, see (a) Mary A. Bany and Lois V. Johnson, *Classroom Group Behavior*: *Group Dynamics in Education* (New York: MacMillan & Co. Ltd., 1963); (b) Hildred Nichols and Lois Williams, *Learning About Role-Playing for Children and Teachers,* (Washington, D.C.: Association for Childhood Education International, 1960); (c) Mark Chesler and Robert Fox, *Role-Playing Methods in the Classroom* (Toronto, Science Research Associates, 1966).

Self and group evaluation is an important part of the learning process. Useful discussion of "How did we do?" — "What worked best?" — "What should we do differently next time?" can follow the culmination of each study. But children always want also to know what the teacher and other grown-ups think of their work. For a complete guide to this, see *Evaluation in the Social Studies* the 35th yearbook (1965) of the National Council for Social Studies, 1201 Sixteenth Street, N.W., Washington, D.C., 20036.

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HOME ON THE RANGE

General Description

The study begins by posing four questions, followed by the table of contents, surrounded by photographs of seven breeds of sheep. A discussion of the questions, with reference to the title, the contents, and the photographs here and on the covers, will enable the pupils to make tentative answers, supported by what they know, or think they know, that is relevant. This gives an overall view of the study, and pupils can consider what they will need to explore before they can be better informed and more sure of the validity of their answers.

This is followed immediately by an introduction to the Brantford nurse they are to accompany to the ranch, and to the ranch family, the Boyers . . . all real people who have contributed most of the quoted material used in the study. Pictures and Miss Maxwell's first impressions of life on the range are used to begin comparison of urban and rural living raised by the title song, "Home on the Range".

Having arrived as "greenhorns", the children share with Miss Maxwell her initiation into life on the range with the Boyer family, through spring, summer, autumn, and winter. Inevitably, they meet the coyote, and are involved in the contemporary debate about predators versus wild-life preservation.

Guided by Mrs. Boyer, they next learn how flocks are improved to meet the local Wyoming conditions — by selective breeding planned to produce hardier sheep as well as more and better quality meat and wool.

This leads directly to the study of wool and woollens, beginning with the shearing and the uses of the by-product, lanolin. The study of the making of woollens, from ancient to modern times, provides evidence of the survival of ancient processes and the gradual application to them, through the centuries, of the invention and technology which lead to modern, large-scale production and a great variety of uses for wool.

The domestication of wild sheep, and the life of ancient and modern shepherds leads to a study of the summer and winter hazards faced by sheepherders in Wyoming. The need for great expanses of three different types of pasture lands opens the study of land use in Wyoming, where more than half of the land is state or federally owned. Much of the land used by the ranchers is State and National Parks and Forest lands, or desert lands, where grazing is permitted under strict government control, as is the use of water from the streams. Considerable study of conservation is possible here.

The last section of the study makes a comparison of sheep-raising in Wyoming, Texas, and British Columbia, all similar in longitude, but different in latitude. It is followed by a map, a pictograph, and illustrations of sheep-raising round the world, with photographs from Australia, New Zealand, the U.S.S.R., and South Africa. The study is so organized to enable the pupils to generalize that sheep thrive best in the temperate zones, in high, dry areas where the annual precipitation will not support cattle-raising or field crops.

The summing up enables the pupils to reconsider the questions asked at the beginning of the study, and using what they have learned, make more informed answers. They should be encouraged to apply this information to the quality of living experienced by the people involved.

The exchange of visits and the field trip have the advantage of focusing attention more on people than on things and could lead to a lively reopened debate upon the values discussed during the study, especially if the urban and rural children become their visitors' guides. Chats with people of different ages, ideas, and opinions would make a culminating discussion of values a rewarding, thought-provoking experience. These are the things which remain with pupils when all the "information" is outdated and forgotten.

Main Idea

The domestication of sheep and their subsequent improvement by selective breeding has been one of man's most rewarding achievements.

Major Facet

Geography is the major facet of the study — the physical geography of the marginal lands (extent, altitude, surface, latitude, climate, products), and the economic geography of large-scale sheep-raising adapted to the nature of the lands used. The emphasis, however, should be given to the effects conditions have upon people and how they meet the challenge of their environment.

Other Facets of the Study

1. The ranch is a family enterprise

A real family shares the work, the play, and the responsibility. This rapidly-vanishing feature of the pioneer days of America is almost unknown to modern children who have little knowledge of, and no involvement in, the employments of their parents and older members of the family. While never explicitly stated, the close-knit nature of the three-generation Boyer family is sensed more and more as the study progresses. Affection, mutual respect, and unity of purpose are some of the values of family life which become evident.

Another admirable feature is the encouragement given the children to start their own enterprise, the Angus herd, after having had responsibility in various chores suited to their ages. It is worth noting that the Angus herd enterprise fits neatly into the larger family enterprise, enables the young people to assume responsibility for their further education, and allows them to learn herd-husbandry and finance from both good and bad experiences on a scale unlikely to produce either over-confidence or frustration.

2. Rural versus urban living

The book provides much more evidence about life on the ranch than about urban life or life on the small-scale, hundred-acre farm where neighbors are across the way or a half-mile down the road. Pupils can contribute to the other side of the question by drawing on their own experiences at home and on their vacations. They will not be as charmed as Miss Maxwell by the sunsets, the clear air, the bright stars, the absence of humidity, television, radio, newspapers, but will probably share her delight in the trail-riding and other activities. Some will shudder at the mention of rattlesnakes without much consideration of the hazards of traffic, or the presence in most urban communities of equally dangerous two-legged "rattlesnakes".

Recreation will probably take first place with the children in this debate, although many will share the Boyer children's delight in working with animals. Unless discussion is guided or instigated by the teacher, most pupils will miss the self-employment nature of ranch, as opposed to the factory, office, etc. employments where livelihood depends upon an employer (or union). There is always work to do on the ranch; no strikes, no unemployment, and no unemployment insurance. Even in a time of poor markets for their produce, or a disaster to the flocks, the Boyers could sustain themselves for quite a long time (and with no welfare payments). Pupils can use the evidence in the text to suggest how they could do it, and should not fail to realize that many urban families have talents and resources to match the Boyer family's summer "dude" ranch as a source of supplementary income.

Whenever evidence is quoted in the urban-rural debate, the obverse should be looked for; for example, the climate is more healthful, but the nearest doctor is a hundred miles away (the veterinarian is closer). Pupils can make parallel lists of urban and rural advantages and disadvantages and add to them as more evidence appears in the study.

Values related to the quality of life will be basic to all this discussion, and it should be expected that children's values will naturally be child-oriented and accepted as such. This should not prevent the teacher from making known to them her own values, likely more like Miss Maxwell's, without giving the impression that they are imposed as superior, but are the result of more experience of life and of personal taste and standards.

3. Conservation and Political Science Concepts

(a) In a region of scanty rainfall, water must be conserved. The Boyers pay for a permit to use a limited amount of water from Savery Creek, as do others downstream. Heavy snowfalls are assets to ranchers; they hope it will melt slowly and sink into the ground instead of running off quickly (and carrying topsoil with it). The irrigation of the kitchen gardens, hayfield (horse and cattle feed), and grain field (horse and poultry feed) take precedence over the lawns.

(b) Sheep-raising on these dry, marginal lands makes them bountiful. The pasture lands, owned by the governments, are allotted to the ranchers by permits which define the area, the number of sheep, and even the roads and trails to be used in going from one to another. This prevents overcropping which would make the lands a desert.

(c) Wild life is protected by laws. Predators like the coyote are controlled by government hunters. Rattlesnakes may be killed.

(d) The forests contribute greatly to water conservation. The winter snows melt more slowly in the evergreen-shaded forests. That is why the forest streams run full and fresh in all but exceptionally dry summers following winters of less snowfall. The cooler high altitude, especially at night, slows the rate of melting and evaporation which is high in the unshaded regions. Groves of aspen, clumps of sagebrush, and even the weeds help to conserve moisture.

(e) Flocks are conserved by breeding hardier sheep, by the care of shepherds and the veterinarian, and by the general dryness, since sheep are susceptible to pneumonia and various hoof diseases caused by dampness. Penicillin is used when sheep are badly cut by a shearer (rarely, since itinerant specialists are employed). The natural lanolin on the wool aids the healing of small cuts and scratches. Vermin are controlled by dipping or spraying after the shearing.

4. The history of the domestication of sheep and the making of woollens is presented in simple, well-illustrated form. The dates given will mean little to the children and are valuable only to indicate the sequence of change and the persistence of the processes. The pictures provide an interesting variety of evidence, of varying reliability: modern drawings based upon conjecture regarding the domestication of sheep, an ancient Egyptian wall painting from a tomb, a medieval tapestry, a modern painting by an artist who probably saw spinning wheels and costumes in a museum, dictionary drawing based upon research, an engraving which may or may not be accurate depending upon the observation and skill of the artist, and photographs of modern machines in operation. Some children will be able to assess the relative reliability of these items of evidence; others will need guidance. All will likely appreciate the value of preserving ancient evidence.

The first mechanization of the making of woollens and the first application of steam power have been omitted, but some children will enjoy researching and reporting on Hargreave's spinning jenny, Arkwright's spinning frame, and the Jacquard loom. Values to be discussed are those of inventions which made mass production and fewer employees possible, and the applications of steam and electric power which made woollen goods cheaper as the world's population increased. A quite different value is that of the appreciation of individually designed and hand-woven woollens which provide an alternative to the uniform, look-alike, machine-produced woollens.

Two other interesting historical items which children may enjoy researching are: (1) the Fat Tails, Asian sheep of rough wool and thick, fatty tails, the ancestors of the sheep shown in the picture of the Kirghiz flock in the U.S.S.R. The tails were the epicurean's delight, but the wool and the rest of the carcass were very inferior; (2) Roquefort cheese, made from ewe's milk and aged in the cool, breezy caves around Roquefort, France.

Some Skills that can be Practised in this Study

Understanding and using maps

- Relating the vertical and oblique aerial photographs to the maps helps pupils to "picture" the landscape when using a map.
- Using a variety of map scales, and a vertical scale on the diagram of altitudes.
- Becoming aware of the metric units: kilometres for distances and metres for altitudes.
- Using a legend with a variety of symbols.
- Adding to the understanding of the zones, the equator, and the effects of latitude on the climate.
- Using a grid for map locations.

Using a variety of quoted evidence

- Identifying the person quoted, and observing the difference in viewpoints; for example, those of experienced members of the Boyer family and Miss Maxwell, the stranger to ranch life.
- Understanding the different uses of quotations from the dictionary, an encyclopedia, newspapers, and the author.
- Relating what is said to what is shown in the pictures, graphs, maps, tables, and diagrams.
- Using captions, and making suitable captions for pictures that have none.

Using a variety of pictured evidence

- "Reading" a picture to find evidence relevant to the topic or question. Pupils weak in this skill can be helped by a directed lesson in which they make an inventory of everything to be seen in a picture, and list the items on the board, arranging them into related groups or numbering the items in order of their significance. Irrelevant observations can be crossed out.
- Becoming more aware of the varying reliability of pictured evidence; for example, on-the-spot Boyer Ranch pictures and those from other sources; between posed and unposed photographs, etc.
- Comparing the pictographs with the tables and other graphs and discussing the advantages and drawbacks of each.

Using mathematics

This study offers a wide range of practical uses of mathematics suited to the wide range of mathematical competence and readiness found in most classes. The teacher will know which of the opportunities are suitable to use.

(a) *Number*

Mrs. Boyer's letter of invitation on page 1 speaks of 2,000 sheep, 70 horses, $200 a month, and 10 miles to the nearest doctor. Few, if any, of the children will have any concept of 2,000 sheep other than "It's an awful lot!". Let the concept develop as the study presents more and more pictures of flocks, considering at first only which of two pictures shows more or fewer sheep. A start may be made on more accurate estimates and concepts using the picture of the Ontario flock on page 9. The number may first be estimated, then fairly accurately counted (about 100 - 120). A flock of 2,000 can then be thought of as 15 or 20 times as numerous. Similar estimates and comparisons can be made from time to time without too much digression.

The 70 horses on the ranch can be thought of as "How many horses would that be for each of us?" If it is about 2, "Hold up your hands as if you were leading each of your horses. Look around and see how many 70 is", or "Use these toothpicks and bits of plasticene to make your number of horses. Put them together on this table which will be their pasture field. Then we can see how many 70 is". Similar stick figures can be made for the "more than 50" Angus cattle, with the 20 lost through bloating lying "dead" (page 12).

Large numbers, like the 43,500 deer in Algonquin Park reduced to 6,000 after wolves and coyotes were protected (page 27), will elicit from children such responses as "more", "much more", "fewer", etc., which is about as much as can be expected.

(b) Time

- by the clock; for example, pages 4, 12, 18, 24. The a.m. and p.m. abbreviations should be understood. Finding elapsed time is relevant and useful when reading Jean's description of her more than twenty hours of riding to see the trailing of the sheep.
- by months, their sequence, and the seasons, studied in the length of Jean's stay, the different pasture lands used, and graphically shown in the climatographs where the year begins with the beginning of spring and ends with the end of winter.
- choronological order, most easily understood in Steve's account of his chores and interests, the sequence of the months and seasons, and most difficult in the four illustrations of wool-making in times past.

(c) Weight

- Jean's rescued lambs grew to weigh "about twenty pounds" before they were turned loose, and she found it hard to lift those she had bottle-fed. Using a suitable set of scales, the pupils can find out (with books, bricks, etc.) how heavy twenty pounds is.
- When pupils investigate the prices of locally produced fresh lamb and imported frozen lamb at the market, they will be able to estimate, and check, the weight of a leg of lamb.

(d) Money

- Jean's $200 a month can be understood in terms of "How much a day is that?", "What will $200 buy?", etc.
- Steve's estimate of the annual loss from predatory animals (millions) is harder. Try comparing it with the cost or value of the school, or "How many $25,000 houses for a million dollars?".
- The value of the Australian Grand Champion ram (page 29) invites the looking up of the value of the Australian dollar in U.S. and Canadian dollars in the daily newspaper, converting it, and finding out what new automobile could be bought for that.

(e) Temperature

- If a centigrade thermometer is available, hang it with a Fahrenheit in the classroom, and at times put them both on the outside window sill for interested pupils to observe. For most children the aim should be only an awareness of the other widely used scale. The gifted can find the conversion formula in the dictionary.
- Statistics are given for Brantford and Dixon (page 2) and Kamloops and Alpine (page 43). These can be converted into climatographs by the more skilled. Probably the best way to learn how to interpret a climatograph is to make one for the local area. If statistics are not available locally, the official sources are:—

  U.S.A.
  National Climatic Center,
  Federal Building,
  Asheville,
  North Carolina 28801

  CANADA
  Atmospheric Environment,
  4905 Dufferin Street,
  Downsview,
  Ontario.
- General statements like Jean's "down to forty last night", "110 in the sun", and Steve's "Was it ever cold!" should invoke comparison with local temperatures at the same time of the year.

(f) Precipitation

- in inches, with the 10 per cent conversion formula for snowfall. An understanding of the very heavy rainfall that totals one inch may be developed by putting out a pan on a rainy day and measuring the accumulation. Evaporation can be measured also, both in the sun and in the shade. Snow may be measured, melted down, and the formula tested with "dry" snow and "wet" snow. The rainfall equivalent to the 20-inch snowfall at Rawlins (page 39) is a simple conversion task.

- The annual precipitation is an important factor in determining land use. By the end of the study the children should be able to generalize about the few inches per year that leave a land arid, and the 30-40 inches per year that make crops successful.

(g) *Distance*

- in miles, probably best understood by local comparison; for example, "If we were a hundred miles from a doctor, where would he live?" Using a large-scale local map, pupils can mark off on a strip of paper a length of a hundred miles from the scale. "How long would it take the doctor to get to us?" is another suitable question. "What place is as far from our school as Steve's home is from the Savery School? How long would it take to walk there?"
- in degrees of latitude. Use the glossary definition and a globe. Pupils can see that the farthest north or south from the equator is a quarter of the distance around the globe, thus 90 degrees. Exercises should include finding the local latitude and comparing it with the latitudes given for the places studied.
- When pupils measure the distance from the ranch to the Savery School, they should read again Jean's first letter and note her observation about "twisting roads". They should realize that the distances by road are usually greater than the distances we measure on a map in a straight line. The expression "as the crow flies" will then become meaningful. This may be tested when a field trip is made by road, by first measuring the distance on the map, then recording the starting and stopping mileages on the bus.

(h) *Altitude, in feet (or metres).* The local altitude should be compared with those shown on the maps and those given with the data on climate.

(i) *Areas*

- in acres, probably best understood by measuring off and outlining an acre in the schoolyard. More capable pupils can measure the whole school property, their home lots, and state their areas in acres. Classroom floors can be measured to see how many of them would make an acre. When a field trip is made to a sheep-raising farm, the farmer will be able to state the total acreage of his farm, and likely point out a ten-acre or similarly sized field.
- A square mile can also be envisaged on the trip, especially if the roads used are a mile apart. The bus driver can then drive around the four sides of a square mile. City maps can also be used to mark off the streets that would be the boundaries of a square mile and the area viewed from the top of the highest building.

(j) *Populations,* such as those of Savery and Brantford, are best understood by naming places of similar populations with which pupils are familiar.

(k) *Size* is observable in all the best photographs, like those of the sheep being held by the herder, the stream being crossed by the landrover, and the length of Merino wool by comparison with the hands of the man who is separating the fleece. Something of a size known to the children should be looked for in a photograph when the question of size arises.

Literature, Language, and Music

Literature and Language can be an interesting exploration. Such a research can vary from the nursery rhymes (Baa, baa, black sheep; Mary had a little lamb), to Aesop's "Town Mouse and Country Mouse", to tales about shepherds, to Biblical similies ("All we like sheep have gone astray"), to mythology (The Golden Fleece), to the sheep-skin parchment, to the university graduate's sheep-skin hood, to such idioms as "by hook or by crook", to poetry that sings of rural or urban delights.

Music can be another investigation. There are innumerable spinning songs, many of origins deep in the past. There are an equal number of modern folk songs, the themes of which are often like that of "Country Road" — "Take me home, take me home to the place where I belong", or "The Green, Green Grass of Home."

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Free materials for teachers

In the United States: The Wool Bureau, Inc., 360 Lexington Avenue, New York, N.Y. 10017.

In Canada: The Wool Bureau of Canada Limited, 2200 Yonge Street, Toronto 12, Ontario.

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